

ONE PIECE A-PILLAR AIR DEFLECTOR AND WINDSHIELD MOLDING

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field:

[0002] The invention relates to an air deflector for keeping the side windows of a motor vehicle clear of water borne dirt and grime.

[0003] 2. Description of the Problem:

[0004] The adhesion of dirt and grime on the side windows of motor vehicles during periods of rain and especially when roads are wet from rain or melting snow is well known to drivers. Some of the problem stems from precipitation and spray hitting the windshield and then flowing around the windshield to the side of the vehicle. Here it can be caught in an area inside the slipstream adjacent to the vehicle allowing it to collect on the surface of the windows. Still more dirt is simply carried by water particles directly against the windows. Motor vehicle manufacturers have attempted to address the problem by incorporating a water catching channel into the windshield molding which directs dirty water up and over the windows. In contemporary vehicle assembly a windshield molding is attached around the circumference of the windshield to provide a tight seal between the window glass and the vehicle body. The water catching groove can be formed in the molding for channeling water along the A-pillars on both sides of the windshield.

[0005] Such grooves or channels have usually been formed by a depression in the mold. German laid open application 36 00 504 A1 teaches a channel formed by a projecting forward swept lip mounted to the vehicle's A-pillar. The channel is located at the base ends of the forward swept lip and an attachment lip secured to the A-pillar.

SUMMARY OF THE INVENTION

[0006] According to the invention there is provided a slipstream deflector mounted on vehicle for generating turbulence in the slipstream adjacent the vehicle's side windows and acting to prevent accumulation of dirt and grime carried by road spray and precipitation on the vehicle's side windows. The left and right side deflectors are located on left and right side vehicle A-pillars. The deflectors have reverse swept contours and extend outwardly from and parallel to the left and right side A-pillars. The deflectors extend outwardly from the A-pillars into any slipstream generated by forward movement of the vehicle. The left and right side A-pillars further define, in part, a windshield frame. A windshield is set in the frame. A seal between the frame and the windshield is provided by a windshield molding attached around the circumference of a windshield. The windshield molding includes an inwardly directed lip extending over an outer surface of the windshield and an outwardly directed lip extending back over an interior perimeter of the frame. The left and right side reverse swept deflectors are formed integrally with sides of the windshield molding adjacent the A-pillars, and extend from the outwardly directed lip. By "reverse swept" it is meant that the deflectors have a base which is forward on the vehicle relative to the outward tip of the deflector and the deflector does not act as a water catching channel for material coming off the windshield.

[0007] Additional effects, features and advantages will be apparent in the written description that follows.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself however, as well as a preferred mode of use, further objects and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

[0009] Fig. 1 is a perspective view of a truck cab incorporating the invention.

[0010] Fig. 2 is an exploded view of the windshield/cab assembly.

[0011] Fig. 3 is a cross sectional view taken along section line III-III in Fig. 1.

[0012] Fig. 4 is a cross sectional view taken along section line III-III of an alternative embodiment of the invention to that shown in Fig. 3.

[0013] Fig. 5 is a cross sectional view taken along a reverse swept contour parallel to a vehicle A-pillar as illustrated by section line V-V in Fig. 1.

[0014] Fig. 6 is a cross sectional view taken along section line VI-VI in Fig. 1.

[0015] Fig. 7 is a schematic illustration of operation of the invention on a vehicle.

DETAILED DESCRIPTION OF THE INVENTION

[0016] Referring now to the figures and in particular to Fig. 1, where a truck cab 10 is shown. Truck cab 10 is equipped with a forward oriented windshield 40 and side windows including passenger side window 20 which may be subject to the accumulation of dirt from road spray and precipitation. Windshield 40 is mounted on truck cab 10 between left side and right side A-pillars 48 and 49. Passenger side window 20 is located along the side of the vehicle behind right side A-pillar 49. A driver side window (not shown) is similarly located behind left side A-pillar 48. Extending outwardly from A-pillars 48 and 49 are air deflectors 22 and 24. Absent the air deflectors the slipstream which envelopes cab 10 at highway speeds tends to separate along the side of the vehicle creating a dead zone adjacent the side windows into which particles carried by the slipstream can escape. Deflectors 22 and 24 introduce turbulence to the slipstream which moves any dead zone away from the side of the vehicle and hinders the collection of grime and grit on the side windows.

[0017] Fig. 2 illustrates attachment of windshield 40 to a truck cab 10. Truck cab 10 has a frame 11 with a windshield opening 12 bordered by windshield frame sides 14, 16, 18 and 19. An

encapsulated windshield trim piece **46**, which is preferably a molded element, is attached around the perimeter of windshield **40** and, upon mating of the windshield with frame **11**, extends over portions of the cab **10** adjacent windshield opening **12**. Trim piece **46** hides a gap between windshield glass and A-pillars **48** and **49**, as well as between the windshield glass and the cab roof along the top edge of the glass. Trim piece **46** may be a one piece molding and preferably incorporates two air deflectors **22** and **24** which extend from sides of the trim piece adjacent A-pillars **48** and **49**.

[0018] Referring now to **Fig. 3**, a cross sectional view of trim piece **46** taken along section line **III-III** of **Fig. 1** illustrates a preferred configuration of the trim piece **46** to provide for encapsulation of the windshield **40** and to provide a wind deflector **22** along a driver side A-pillar **48**. Trim piece **46** comprises a base, circumferential protrusion **32** which abuts an edge **43** of the windshield glass. Extending inwardly from base **32** over an exterior face **41** of the glass is a lip **36** which adheres to the glass by known methods. Extending outwardly from base **32**, in the opposite direction from the inwardly directed lip **36**, is a second lip **34** which extends over a portion of the exterior face **30** of A-pillar **48**. At the end of lip **34** distal to base **32** is the base of an air deflector **22**, which takes the form of a flap or spoiler extending outwardly from the A-pillar **48** but which is reverse swept relative to the prevailing slipstream direction. Air deflector **22** preferably extends from the top of A-pillar **22** to its bottom, but not around the top and bottom sides of the trim piece **46**. Air deflector **24** is similarly configured.

[0019] **Figs. 4** and **5** illustrate an alternative embodiment of the invention in which the position of air deflector **22** is reinforced by a plurality of ribs or buttresses **50** which extend inwardly from a face of the deflector opposite the exterior surface **30** of A-pillar **48** toward the exterior surface. The buttresses **50** inhibit movement of and flex damage to air deflector **22**.

[0020] **Fig. 6** shows the cross sectional profile of trim piece **46** taken along section lines **VI-VI** of **Fig. 1** where windshield **40** is mated with the cab's roof. Outwardly oriented lip **34** carries no air deflector adjacent the vehicle roof. A similar arrangement holds along the bottom edge of windshield **40**.

[0021] Figs. 7A and 7B provide a comparison of slipstream flow around a cab 10 equipped with the right side A-pillar air deflector 24 (Fig. 7B) and one missing such a deflector (Fig. 7A). The slipstream in both cases is so labeled and flows from the front of the vehicle around to the side and back of the vehicle. Areas of stagnation are indicated by shaded areas 62 (in the wind shadow of exterior mirror 60), 64 (along the side of the vehicle) and 66 (along side but spaced from the side of the vehicle). Air flow in Fig. 7B eddies back along the surface of window 20 in the lee of deflector 24 assuring that zone 66 is spaced from window 20. Continuous air circulation adjacent window 20 helps keep dirt and grime particles suspended in the slipstream and reduces the quantity of dirt losing momentum and settling on the surface of window 20. Forming the deflector as one piece with the windshield edge molding reduces tooling costs and avoids adding parts in providing such a deflector.

[0022] While the invention is shown in only two of its forms, it is not thus limited but is susceptible to various changes and modifications without departing from the spirit and scope of the invention.